AMENDMENT(S) TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims on the application. All claims are set forth below with one of the following annotations.

- (Original): Claim filed with the application.
- (Currently amended): Claim being amended in the current amendment paper.
- (Canceled): Claim cancelled or deleted from the application. No claim text is shown.
- (Withdrawn): Claim still in the application, but in a non-elected status.
- (New): Claim being added in the current amendment paper.
- (Previously presented): Claim added or amended in an earlier amendment paper.
- (Not entered): Claim presented in a previous amendment, but not entered or whose entry status unknown. No claim text is shown.

1. (Currently amended) A method of determining filter coefficients for filter stages in a multirate digital filter device to achieve a desired filter response, the method comprising the steps of:

(a) determining a plurality of log-scale sample points representing the desired response function on a logarithmic frequency scale,

(b) determining a first series of evenly spaced sample points representing the desired response function on a logarithmic time scale, ~~whereby~~ such that the sample points of the first series have an increasing spacing when viewed in a linear time scale, including deriving the sample points of the first series from the log-scale sample points, and

~~(b)~~ (c) determining a respective plurality of filter coefficients for each filter stage from an associated group of sample points out of the first series of sample points, such that each plurality of filter coefficients is determined from determined log-scale sample points.

wherein each successive filter stage in the multirate digital filter device is for linearly spaced samples at a sampling rate that is decimated by an integer factor from the previous filter stage, and

wherein at least one plurality of filter coefficients for a respective filter stage is determined from more than one log-scale sample point.

2. (Cancelled)

3. (Currently amended) A method as claimed in ~~claim 2~~ claim 1, wherein the step of deriving the sample points of the first plurality from the log-scale sample points is further based on a desired phase response of the multirate digital filter device.

4. (Currently amended) A method as claimed in ~~claim 2~~ claim 1, wherein the step of deriving the sample points of the first plurality from the sample points of the second plurality comprises deconvoluting the desired response function in the logarithmic frequency scale using a set of prototype filter response functions, and deriving the first plurality of sample points representing the desired response function in the logarithmic time scale from a summation of corresponding prototype filter response functions.

5. (Original) A method as claimed in claim 1, wherein the filter coefficients for each filter stage are determined such that a last tap in one stage is equal to a first tap in the next lower rate filter stage.

6. (Original) A method as claimed in claim 1, wherein step (b) comprises, for each associated group of sample points out of the first plurality of sample points, applying a transform matrix to determine the filter coefficients of the associated filter stage.

7. (Original) A method as claimed in claim 6, wherein for at least some of the associated groups of sample points the same transformation matrix is applied to determine the filter coefficients of the respective associated filter stages.

8. (Original) A method as claimed in claim 6, wherein the transformation matrices are based on a substantially inverse filter response characteristic analysis of the individual filter taps of the respective filter stages.

9. (Currently amended) A multirate digital filter device comprising:

a plurality of filter stages, each successive filter stage in the multirate digital filter device being for linearly spaced samples at a sampling rate that is decimated by an integer factor from the previous filter stage,

an interface unit for inputting a desired filter response of the digital filter device, and

a processor unit for determining filter coefficients for the filter stages to achieve the desired filter response,

wherein the processor unit is arranged, in use, ~~such that~~ to transform a response function representing the input desired filter response on a logarithmic frequency scale is transformed into a logarithmic time scale, including: ~~a first plurality of sample points representing the response function in the logarithmic time scale is determined, such that the sample points of the first plurality have an increasing pitch when viewed in a linear time scale, and the filter coefficients for each filter stage are determined from an associated group of sample points out of the first plurality of sample points~~

(a) determining a plurality of log-scale sample points representing the desired response function on a logarithmic frequency scale,

(b) determining a first plurality of evenly spaced sample points representing the desired response function on a logarithmic time scale, such that the sample points of the first plurality have an increasing spacing when viewed in a linear time scale, including deriving the sample points of the first series from the log-scale sample points, and

(c)determining a respective plurality of filter coefficients for each filter stage from an associated group of sample points out of the first plurality of sample points such that

each plurality of filter coefficients is determined from determined log-scale sample points,

wherein at least one plurality of filter coefficients for a respective filter stage is determined from more than one log-scale sample point.

10. (Cancelled).

11. (Currently amended) A device as claimed in ~~claim 10~~ claim 9, wherein the processor unit is further arranged such that, in use, the deriving the sample points of the first plurality from the log-scale sample points ~~of the second plurality~~ is further based on a desired phase response of the multirate digital filter device.

12. (Currently amended) A device as claimed in ~~claim 10~~ claim 9,, wherein the processor unit is arranged such that, in use, the deriving the sample points of the first plurality from the log-scale sample points ~~of the second plurality~~ comprises deconvoluting the desired response function in the logarithmic frequency scale using a set of prototype filter response functions, and to derive the first plurality of sample points representing the desired response function in the logarithmic time scale from a summation of corresponding prototype filter response functions.

13. (Original) A device as claimed in claim 9, wherein the device is arranged, such that, in use, filter coefficients for each filter stage are determined such that a last tap in one stage is equal to a first tap in the next lower rate filter stage.

14. (Original) A device as claimed in claim 9, wherein the processor unit is arranged such that, in use, the determining of the filter coefficients for each filter stage from an associated group of sample points out of the first plurality of sample points comprises, for each associated group of sample points out of the first plurality of sample points, applying a transform matrix to determine the filter coefficients of the associated filter stage.

15. (Original) A device as claimed in claim 14, wherein the processor unit is arranged such that, in use, for at least some of the associated groups of sample points the same

transformation matrix is applied to determine the filter coefficients of the respective associated filter stages.

16. (Original) A device as claimed in claim 14, wherein the processor unit is arranged, in use, to base the transformation matrices on a substantially inverse filter response characteristic analysis of the individual filter taps of the respective filter stages.

17. (Currently amended) A ~~data storage~~ computer-readable medium having ~~stored~~ encoded thereon computer readable data for instructing a computer to execute a method of determining filter coefficients for filter stages in a multirate digital filter device to achieve a desired filter response, the method comprising the steps of:

(a) determining a plurality of log-scale sample points representing the desired response function on a logarithmic frequency scale,

(b) determining a first series of evenly spaced sample points representing the desired response function on a logarithmic time scale, ~~whereby~~ such that the sample points of the first series have an increasing spacing when viewed in a linear time scale, including deriving the sample points of the first series from the log-scale sample points, and

~~(b)~~ (c) determining a respective plurality of filter coefficients for each filter stage from an associated group of sample points out of the first series of sample points, such that each plurality of filter coefficients is determined from determined log-scale sample points,

wherein each successive filter stage in the multirate digital filter device is for linearly spaced samples at a sampling rate that is decimated by an integer factor from the previous filter stage, and

wherein at least one plurality of filter coefficients for a respective filter stage is determined from more than one log-scale sample point.

18. (New) A computer-readable medium as claimed in claim 17, wherein the step of deriving the sample points of the first plurality from the log-speced sample points is further based on a desired phase response of the multirate digital filter device.

19. (New) A computer-readable medium as claimed in claim 17, wherein the step of deriving the sample points of the first plurality from the log-spaced sample points comprises deconvoluting the desired response function in the logarithmic frequency scale using a set of prototype filter response functions, and deriving the first plurality of sample points representing the desired response function in the logarithmic time scale from a summation of corresponding prototype filter response functions.

20. (New) A computer-readable medium as claimed in claim 17, wherein the filter coefficients for each filter stage are determined such that a last tap in one stage is equal to a first tap in the next lower rate filter stage.